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Anh Nguyen
05/18/2004 07:28 AM

To: NCIC HPV@EPA
cc:
Subject: Fw: Environmental Defense comments on the Asphalt Category

----- Forwarded by Anh Nguyen/DC/USEPA/US on 05/18/2004 07:27 AM -----



rdenison@environmentaldefense.org
05/17/2004 09:46 AM

To: NCIC OPPT@EPA, ChemRTK HPV@EPA, Rtk Chem@EPA, Karen Boswell/DC/USEPA/US@EPA, Grayt@api.org
cc: luciarg@msn.com, kflorini@environmentaldefense.org, rdenison@environmentaldefense.org
Subject: Environmental Defense comments on the Asphalt Category

(Submitted via Internet 5/17/04 to oppt.ncic@epa.gov, hpv.chemrtk@epa.gov, boswell.karen@epa.gov, chem.rtk@epa.gov, luciarg@msn.com and Grayt@api.org)

Environmental Defense appreciates this opportunity to submit comments on the robust summary/test plan for the Asphalt Category.

The test plan and robust summaries were submitted by the Petroleum HPV Testing Group of the American Petroleum Institute. The test plan is complex and covers six different CAS Numbers; Asphalt (8052-42-4), Vacuum petroleum residues (64741-56-6), Raffinates of petroleum (64742-07-0), Petroleum resins (664742-16-1), Hydrodesulfurized vacuum residues (64742-85-4) and Oxidized asphalt (64742-93-4).

While the processes used to generate the six members of the proposed category are well-described, the range of compositions found for each member is not sufficiently described to justify category formation. For example, analysis of asphalts from different crude petroleum sources revealed wide variations in concentrations of sulfur (6-fold), vanadium (300-fold) and nickel (250-fold). These are either toxic chemicals or give rise to toxicants (hydrogen disulfide in the case of sulfur). It also appears that the range of polycyclic aromatic compounds (PAC) varies tremendously in different asphalt fume condensates used in genetic toxicity tests. How do these large variations in complex mixtures influence the pattern of toxic responses expected for each of the proposed members? Based on the information provided, we do not concur that category formation is justified.

For many of the SIDS endpoints, data are not available for any of the proposed category members. For example, there are no data for the ecotoxicity endpoints or for reproductive/developmental toxicity. The sponsor proposes to conduct a combined inhalation reproductive/developmental toxicity study using "real world" asphalt fumes. The identity of the test substance and the temperature at which it will be generated are not further defined. Which of the six proposed category members will be used and what will be the chemical composition of the test substance? If only one member is to be tested, what criteria will be used for sample selection? If only one member is tested it will be important to test the most toxic one, yet how would this be established in the absence of data?

The sponsor claims that no ecotoxicity tests are needed because asphalt is not expected to be toxic to fish, aquatic invertebrates and algae. The

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basis for this claim is that asphalt linings have been applied to aquaculture ponds without adverse effects on fish, and that lubricating base oils are nontoxic. However, the chemical compositions of the asphalt used in the linings and the lubricating oil surrogate are not provided. Unless the sponsor can present a more compelling case that existing data are relevant to predicting the ecotoxicity of all six members of the proposed category, ecotoxicity studies need to be conducted at least on the most toxic of the category members (and its selection needs to be justified).

Other comments are as follows:

1. The sponsor repeatedly states that the toxicity of asphalt is a function of the temperature at which fumes are generated; the higher the temperature, the higher the toxicity, because of increased production of 3-7 ring PACs. While this appears to be true, further discussion of the test substance to be used in new studies is needed. For example, what is the temperature used to produce asphalt at the asphalt plant and what is the temperature when the asphalt is applied to roads or roofs? Considerable cooling may occur in transit so there might be greater risks to those around the asphalt plant. Also, asphalt is prepared by different methods: batch and drum. Are the temperatures used the same or different, and are different amounts of pollutants emitted from the batch and drum plants? How will the proposed test substance(s) be representative of all of these variables for all of the category members?

2. The sponsor states that high levels of hydrogen sulfide can be emitted from asphalt. EPA has recently lowered its Allowable Air Limit (AAL) for this agent because of its neurotoxic and pulmonary effects. What will be the concentration of hydrogen sulfide in the asphalt fumes used to conduct the proposed tests and will it be reflective of all category members?

3. The repeat dose study appears to be well-conducted, but the composition of the test substance, other than PACs, was not provided in the robust summary. This information needs to be added and evaluated before we can concur that this study is appropriate to be used to estimate effects for all category members.

4. Asphalt fume condensates are mutagenic and have been shown to lead to increased DNA adduct formation. The potency of different condensates seems to be related to the concentration of PACs. These studies were well-conducted and they easily satisfy HPV requirements for genetic toxicity.

Thank you for this opportunity to comment.

George Lucier, Ph.D.
Consulting Toxicologist, Environmental Defense

Richard Denison, Ph.D.
Senior Scientist, Environmental Defense